

nignity. These concepts are now under vigorous attack.

Many forms of thyroid cancer have a relatively benign clinical course even if untreated, and there is still enough controversy regarding the pathologic differentiation of benign from malignant tumors to provide traditionalists with ammunition to defend older attitudes. To date no patient who has had thyroid cancer detected as a result of postirradiation screening tests has died of the disease. However, the most conservative approach is to treat many of the classic concepts about thyroid cancer with skepticism, especially in patients who have received radiation in childhood. Palpation, scintiphotos and thyroid function tests are indicated in all persons with history of such irradiation. Either a palpable nodule *or* nonpalpable "cold" area on scintiphoto is sufficient indication to at least consider surgical operation. If all thyroid studies give normal findings, treatment with replacement doses of thyroxine may provide some protection against future tumor development.

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Abnormal Brain Scan Findings Resulting from Prior Electroencephalograms

A BRAIN SCAN and an electroencephalogram are used often in combination to evaluate patients with neurologic symptoms. When these two modalities are required, the brain scan should be done first.

Much of the cranial activity seen on a brain scan results from radionuclide accumulation in the extracellular fluid of the scalp and skull. The minimal scalp irritation associated with the application of electroencephalographic electrodes with electrode glue has been reported to result in a local increase in extracellular fluid concentration and a corresponding increase in activity on the brain scan. In the preceding twelve months at the University of California, San Diego, we have also observed abnormal brain scan findings

following an electroencephalogram. The sites of abnormal accumulation were located peripherally and repeat scans several days later gave normal findings.

In summary, because an electroencephalogram may result in minor scalp trauma and localized radionuclide accumulation, a brain scan should be carried out first. When an electroencephalogram is done before the brain scan, the nuclear medicine physician concerned should be made aware of the electroencephalogram and the brain scan should be delayed, if possible, at least 48 hours.

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Gallium-67 Tumor Imaging

SINCE 1969, scanning with gallium-67 as the citrate has gained wide use, although its acceptance as a routine test in nuclear medicine is still limited because of the variability of uptake in bowel, liver, spleen and bone marrow and the nonspecificity of gallium for tumor.

In tumor evaluation gallium has found its greatest success in the detection and staging of lymphomas. The accuracy in detection of involved sites in Hodgkin's disease has been reported as 65 to 79 percent. The information from gallium scans and lymphangiograms is complementary. Efficacy above the diaphragm is better than below. Non-Hodgkin's lymphoma has a somewhat poorer detection rate and uptake seems to depend on the histocytic component.

Other tumors with high affinity to gallium citrate include bronchogenic carcinomas where mediastinal involvement may be detected while findings on x-ray studies are still normal. Melanoma detection has been evaluated in several institutions and found to be good in lesions larger than 2 cm. Gallium uptake in hepatoma may also be high with a reported detection rate of 70 to 90 percent.

Other tumors show greater variability in uptake even within tumor types. Adenocarcinomas are generally not well detected. Head and neck tumor evaluation has been moderately successful.